

CUSTOMER NO.: 24498
Serial No. 10/552,264
First Office Action dated 3/4/09
Response dated: 06/04/09

PATENT
PD030038

Remarks/Arguments

In the First Office Action, the Examiner noted that claims 1-10 are pending in the application and that claims 1-10 stand rejected. By this response, claims 11-14 have been added. Claims 1, 5, 9 and 10 have been amended to more clearly define the invention of the Applicant.

In view of the amendments presented above and the following discussion, the Applicant respectfully submits that none of these claims now pending in the application are rendered obvious under the provisions of 35 U.S.C. § 103. Furthermore, the Applicant also submits that all of these claims now satisfy the requirements of 35 U.S.C. § 112. Thus, the Applicant respectfully submits that all of these claims are now in allowable form.

Rejections

A. 35 U.S.C. § 112

The Examiner rejected claim 5 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

The Examiner indicates that claim 5 claims variables n and k not mentioned in claim 1 and claim 5 doesn't give any indication of what they are.

In response, the Applicant has herein amended claim 5 to remove any mention of variables n and k. Having done so, the Applicant submits that the basis for the Examiner's rejection of the Applicant's claim 5 has been removed and as such respectfully requests that the Examiner's rejection of claim 5 under 35 U.S.C. 112 be withdrawn.

B. 35 U.S.C. § 103

The Examiner rejected the Applicant's claims 1-10 under 35 U.S.C. § 103(a) as being unpatentable over Kim (U.S. Patent No. 6,463,208) in view of Itoh (U.S. Patent Publication No. 2005/0013583). The rejection is respectfully traversed.

The Examiner alleges that, regarding claims 1 and 10, Kim teaches a method and apparatus for reading three or more data streams from a storage medium including almost all of the aspects of the Applicant's invention except that Kim fails to

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PATENT
PD030038

teach or suggest the pick-up data rate is higher than any of the buffer output data rates, with the amount of buffered data relating to any of said data streams being at least such that subsequent processing can be provided with the buffered data during the time required for accessing and reading the other data streams of the other data types. As such, the Examiner cites Itoh for teaching that a data reading speed is set to be higher than a data reproducing speed so that there is no absence of data to be reproduced in the buffer memory and highest video data buffer output. The Examiner alleges that the combination of Kim and Itoh teach all of the aspects of the Applicant's invention. The Applicant respectfully disagrees.

The Applicant's claims were amended to include the term "out-of-multiplex" in the independent claims 1 and 10, which is disclosed and explained on page 1, lines 17-21, page 2 lines 1-2 and page 4 lines 6-8 and page 5 line 27 - page 6 line 4 of the Applicant's Specification. The Applicant's claims were also amended to include the feature of the period of accessing a further data stream being an integer multiple of the period of accessing the first data stream. According to the amendment of claims 1 and 10, the integer in this case is at least two, thereby eliminating a trivial case of both periods being the same. This feature corresponds to previous claim 5, in which n is defined to be at least two, while in the claim 1 as originally filed $n \cdot T$ was defined to be the period for accessing such other data streams and T was defined to be the period for accessing the first data stream. Claim 5 has been limited accordingly.

Dependent claim 9 has been amended by adding that the additional data are video data, as disclosed on page 8, line 1-15 of the Applicant's Specification. Further, dependent claims 11-14 have been added, which correspond to dependent claims 4, 5, 8 and 9.

The Applicant respectfully submits that Kim and Itoh, alone or in any allowable combination absolutely fail to teach, suggest or render obvious the Applicant's invention of at least the Applicant's amended independent claims. That is, in contrast to the invention of the Applicant, Kim discloses an optical disc reproducing apparatus and method, wherein a data stream is read from a DVD. The structure of the data stream used in DVDs includes video data, audio data, sub-picture data, and control data (col.1, lines 36-38). However, as common for DVD technology, the different data types are multiplexed into only one stream which is read from the disc. The stream contains cells, and "each cell is divided into an integer number of video

CUSTOMER NO.: 24498**Serial No. 10/552,264**

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Response dated: 06/04/09

**PATENT
PD030038**

object unit(s) or VOB(s). A VOB is a basic unit of data for transfer. In Kim, each VOB includes sectors which each store a predetermined range of video/audio data (see Kim col.1, lines 45-48). The stream is then further processed by removing dummy data, buffering in a VBR buffer and decoding. The modules corresponding to these steps are shown in Figs.1 and 4 of Kim. The Applicant points out that Kim uses a system with only one single VBR buffer, ref.9 in Fig.1 and ref.119 in Figs.4 and 5, which stores a mixture of video, audio and sub-picture data. During the decoding performed in a decoding section (ref.30 in Figs.1 and 4), the stream is separated into three sub-streams corresponding to the different data types: video, graphics and audio. However, in Kim no further buffering is performed after separating the different data types. Kim's invention is based on the idea of swapping the sequential positions of a dummy data removing section (ref.33) and the VBR buffer, so that the VBR buffer does not have to store dummy data, and therefore its size can be reduced. The dummy data were added for error correction and can be removed after the error correction being performed.

Due to different video view angles being possible in Kim, the stream is not stored in a continuous manner on the disc (col.3, lines 34-35), as shown in Fig.6. Instead, portions of the data that correspond to the different views are stored in an interleaved manner. When reading video data for a particular view, it is therefore necessary for the pick-up to jump from portion to portion of the view, skipping portions of other views (col.3, lines 57-59 and Fig.6). However, such teachings of Kim are in contrast to the Applicant's claimed invention. The DVD system, as described by Kim, does not have three or more out-of-multiplex data streams that are used for simultaneous reproduction and that are distributed to more than one file on the storage medium, as taught in the Applicant's Specification and as claimed by at least the Applicant's independent claims 1 and 10. Further, the different data types of the DVD system of Kim are not separately buffered after being read from the disc, as taught in the Applicant's Specification and as claimed by at least the Applicant's independent claims 1 and 10. Further, a pick-up for the DVD system does not have to jump back and forth between different data streams. Generally, Kim does not at all discuss pick-up data rate and buffer output data rates.

The Applicant further submits that the teachings of Itoh absolutely fail to bridge the substantial gap between the teachings of Kim and the invention of the

CUSTOMER NO.: 24498
Serial No. 10/552,264
First Office Action dated 3/4/09
Response dated: 06/04/09

PATENT
PD030038

Applicant. More specifically, the Applicant submits that Itoh discloses an audio/video information recording and reproducing apparatus and method, in which a post-recording function can be realized, such that audio recording can be performed simultaneously with reproducing a corresponding previously recorded video. This allows enhanced lip-sync during reproduction of the video and the post-recorded audio data (called "back-audio"). The video and the post-recorded audio data are recorded in separate MPEG streams on the medium, and the pick-up may jump between these streams.

For example, Fig.10 and Fig.24 of Itoh show the principle of interleaved reading from two streams for simultaneous reproduction. Fig.10 shows "a transition of a code amount in a moving image buffer memory and an audio buffer memory during post-recording reproduction" ([0056]). Fig.24 shows the same "in the case where a longer continuous data region for a moving image is kept" ([0070]). Referring to Fig.24 of Itoh, the pick-up reads audio data (1), jumps to the moving image stream (2), and reads moving image data (3). When reading the moving image data started, also the simultaneous reproduction of moving image data and audio data starts. Therefore in the invention of Itoh, the buffer fill level of the audio buffer (lower diagram in Fig.24) decreases, since this buffer is not refilled at this time. The pick-up is busy with reading moving image data, and these are stored in the moving image data buffer. Simultaneously, moving image data are read from the moving image data buffer for the reproduction, but since the pick-up data rate V_r is higher than the buffer read data rate V_{out} , the moving image buffer is continuously filled. Itoh's principle for refilling the two buffers is that the audio buffer is refilled upon request, namely when the current filling of the audio buffer is below a certain threshold ([0099]: "BA-th represents a threshold value for starting a seek operation for writing audio data.

In the case where the code amount in the audio buffer memory becomes BA-th or more, the pickup starts moving from the moving image data to the back-audio data."). This is shown in Fig.24, when the decreasing audio buffer filling reaches the level BA-th. At this time, the pick-up stops reading the moving image data and moves to the audio stream (4), reads audio data (5), thereby refilling the audio buffer, and returns (6,7) to its previous position within the moving image stream. During the time periods (4-7) when the pick-up cannot provide moving image data,

CUSTOMER NO.: 24498**Serial No. 10/552,264**

First Office Action dated 3/4/09

Response dated: 06/04/09

**PATENT
PD030038**

the reproduction of buffered moving image data continues, so that the filling of the moving image buffer decreases continuously. Itoh does, however, teach that generally the capacity of the moving image buffer must be sufficient to bridge this time ([0120]). However, the Applicant's claimed invention is different from Itoh's solution, as explained below.

First, the Applicant teaches, for example, that due to possible variable bit rate (VBR, [0010]) of the video data within the moving image data and due to different sizes of the continuous data regions (CDA, [0126,0151]), the buffer bridge time may vary. In Itoh's system there is no explicitly fixed relationship between the actual refill period of the moving image data buffer and the actual refill period of the audio buffer. For example, in Itoh Fig.10 shows reading of a moving image file being completely synchronized with reading of a back-audio file, while Fig.24 shows a case where the continuous data regions for a moving image file and a back-audio file are higher. As a consequence, the moving image buffer is partly refilled several times during the time period (3), before the pick-up jumps to the audio stream. As a common result of both figures, the minimum time for which audio data must be available in the audio buffer is found to be $t_{Aout} \geq t_{V-CDA} + 3t_{seek}$ which depends on the length of continuous data regions of the video data (t_{V-CDA}). Therefore, although a first data stream (having the highest buffer output data rate) may be read and buffered periodically in periods of a first time that is not specified, the other data stream will not be accessed and buffered in periods of integer multiples of said first period of time, wherein the integer is at least two, as claimed. Instead, the other data stream will be accessed in periods that depend on how long it takes to decode its content. In the example of Fig.10 both streams are accessed in apparently identical periods of time.

In addition, Itoh does not disclose or suggest three or more data streams, as taught in the Applicant's Specification and claimed by at least the Applicant's independent claims. In Itoh's system, there is no need for more than two data streams. Therefore the skilled person will not be prompted to use more than two data streams. Even if in a case where more than two data streams are available and must be accessed, the skilled person will not be able to unambiguously deduce from Itoh's disclosure the claimed feature "other than said first data stream are accessed and buffered in a constant predetermined order in periods of integer multiples of said first period time, the Integer being two or more", because Fig.10 shows a case where

CUSTOMER NO.: 24498**Serial No. 10/552,264**

First Office Action dated 3/4/09

Response dated: 06/04/09

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PD030038**JUN 04 2009**

only two streams are accessed with apparently same access period, so that the integer is one. There is no suggestion in Itoh that one of the access periods may be changed.

Therefore and for at least the reasons recited above, the Applicant submits that Kim and Itoh, alone or in any allowable combination, absolutely fail to teach, suggest or render obvious each and every element of the Applicant's claimed invention as claimed in at least the Applicant's independent claim 1.

Therefore, the Applicant submits that for at least the reasons recited above, the Applicant's claim 1 is not rendered obvious by the teachings of Kim and Itoh, alone or in any allowable combination, and, as such, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Likewise, the Applicant's independent claim 10 recites and claims similar relevant features as claimed in the Applicant's claim 1. As such, the Applicant submits that claim 10 is also not rendered obvious by the teachings of Kim and Itoh, alone or in any allowable combination, and, as such, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Furthermore, the Applicant's dependent claims 2- 9 and new claims 11-14 depend either directly or indirectly from the Applicant's independent claims 1 and 10 and recite additional features thereof. As such, the Applicant submits that at least because the Applicant's claims 1 and 10 are not rendered obvious by the teachings of Kim and Itoh, alone or in any allowable combination, the Applicant further submits that the Applicant's dependent claims 2- 9 and new claims 11-14, which depend either directly or indirectly from the Applicant's claims 1 and 10, are also not rendered obvious by the teachings of Kim and Itoh, alone or in any allowable combination, and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

Conclusion

Thus, the Applicant submits that none of the claims, presently in the application, are rendered obvious under the provisions of 35 U.S.C. § 103. Furthermore, the Applicant also submits that all of these claims now satisfy the

CUSTOMER NO.: 24498**Serial No. 10/552,264**

First Office Action dated 3/4/09

Response dated: 06/04/09

**PATENT
PD030038**

requirements of 35 U.S.C. §101 and 35 U.S.C. §112. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

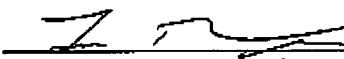
If however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application; or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion, it is respectfully requested that the Examiner telephone the undersigned.

No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account No. 07-0832.

Respectfully submitted,

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